

Speeds and Feeds



RPM : rev/min

FEED: mm/rev

ISO	VDI 3323	Material Description	Composition / Structure / Heat Treatment		HB	HRC		SMM	Drill Pilot Diameter (mm)					
								1.0~10.0	METRIC	1	2	3	4	5
P	1	Non-alloy steel	About 0.15% C	Annealed	125		●	40	RPM	12,730	6,370	4,240	3,180	2,550
									FEED	0.02-0.04	0.03-0.06	0.04-0.08	0.05-0.09	0.06-0.10
	2		About 0.45% C	Annealed	190	13	●	30	RPM	9,550	4,770	3,180	2,390	1,910
									FEED	0.02-0.04	0.03-0.06	0.04-0.08	0.05-0.09	0.06-0.10
	3	About 0.45% C	Quenched & tempered	250	25	○	25	RPM	7,960	3,980	2,650	1,990	1,590	
								FEED	0.01-0.03	0.01-0.035	0.015-0.05	0.02-0.06	0.03-0.07	
	6	Low alloy steel	Annealed	180	10	●	30	RPM	9,550	4,770	3,180	2,390	1,910	
FEED								0.02-0.04	0.03-0.06	0.04-0.08	0.05-0.09	0.06-0.10		
7	Quenched & tempered		275	29	○	20	RPM	6,370	3,180	2,120	1,590	1,270		
							FEED	0.01-0.03	0.01-0.035	0.015-0.05	0.02-0.06	0.03-0.07		
M	12	Stainless steel	Ferritic / Martensitic	Annealed	200	15	○	10	RPM	3,180	1,590	1,060	800	640
									FEED	0.01-0.03	0.01-0.035	0.015-0.05	0.02-0.06	0.03-0.07
K	15	Grey cast iron	Pearlitic / ferritic		180	10	●	40	RPM	12,730	6,370	4,240	3,180	2,550
									FEED	0.02-0.04	0.03-0.06	0.04-0.08	0.05-0.09	0.06-0.10
	16		Pearlitic (Martensitic)	260	26	○	30	RPM	9,550	4,770	3,180	2,390	1,910	
								FEED	0.01-0.03	0.01-0.035	0.015-0.05	0.02-0.06	0.03-0.07	
	17	Nodular cast iron	Ferritic	160	3	○	40	RPM	12,730	6,370	4,240	3,180	2,550	
								FEED	0.02-0.04	0.03-0.06	0.04-0.08	0.05-0.09	0.06-0.10	
	19	Malleable cast iron	Ferritic	130		○	25	RPM	7,960	3,980	2,650	1,990	1,590	
								FEED	0.02-0.04	0.03-0.06	0.04-0.08	0.05-0.09	0.06-0.10	
N		Aluminum				○	60	RPM	19,430	9,710	6,480	4,860	3,890	
								FEED	0.01-0.03	0.04-0.06	0.06-0.09	0.08-0.11	0.09-0.12	

RPM	SMM
$RPM = \frac{SMM \times 1,000}{\pi \times [\varnothing DC_{(millimeter)}]}$	$SMM = \frac{RPM \times \pi \times [\varnothing DC_{(millimeter)}]}{1,000}$

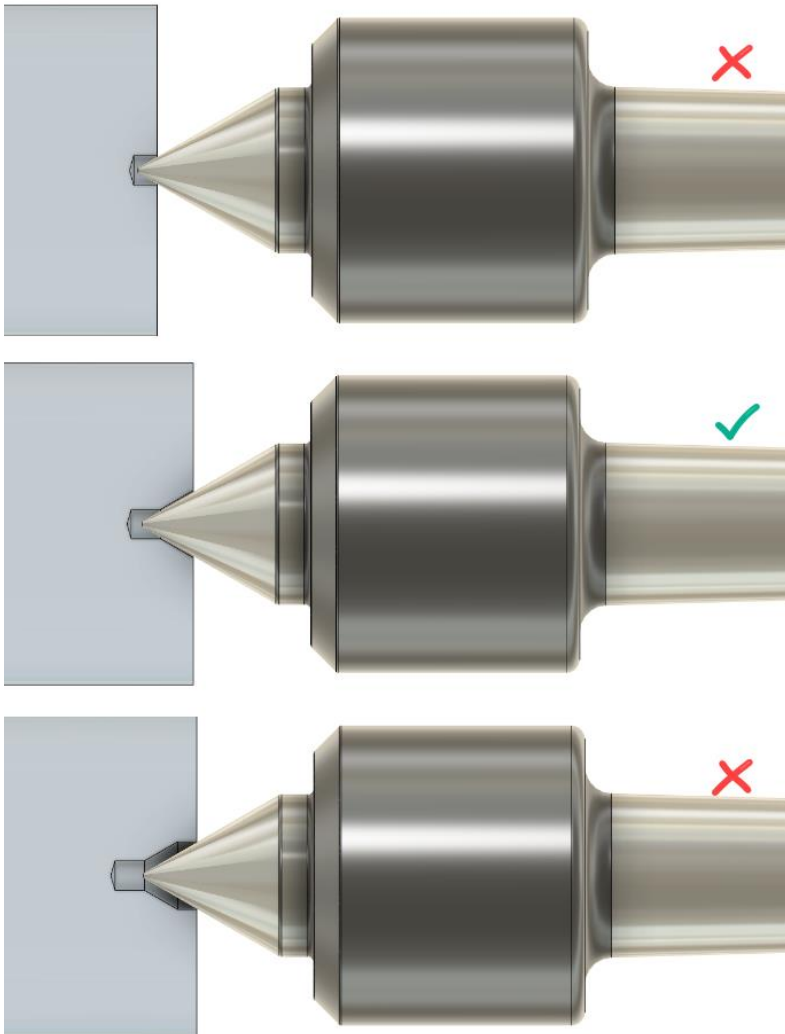
●	Primary
○	Secondary



Technical Details

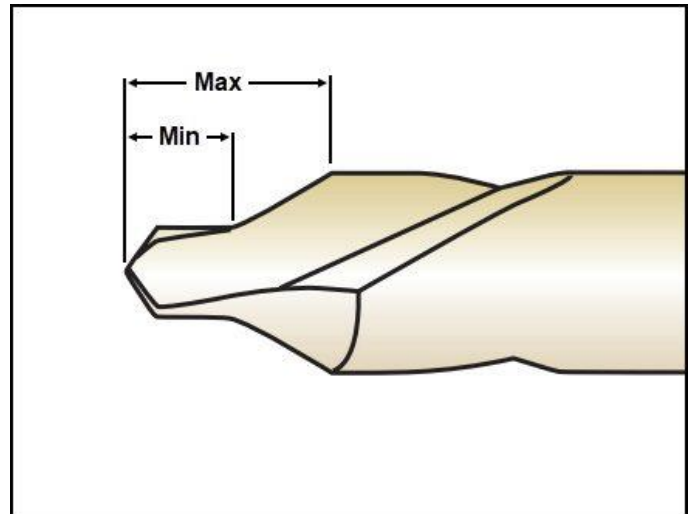


CENTER DRILL DEPTH



Incorrect drill depths being too shallow or too deep will lead to improper work holding. Which may cause imbalance in the work piece, incorrect dimensions or poor finishes.

Use the table below to find the recommended depth range of your center drill.



Haas Part #	[D2] Shank Diameter	[D1] Drill Diameter	Maximum Drill Depth	Minimum Drill Depth
03-1844	3.15 mm	1.25 mm	2.74 mm	2.11 mm
03-1845	4.0 mm	1.6 mm	3.59 mm	2.51 mm
03-1846	5.0 mm	2.0 mm	4.59 mm	3.01 mm
03-1847	6.3 mm	2.5 mm	5.89 mm	3.61 mm
03-1848	8.0 mm	3.15 mm	7.59 mm	4.41 mm
03-1849	10.0 mm	4.0 mm	9.69 mm	5.51 mm
03-1850	12.5 mm	5.0 mm	12.29 mm	6.81 mm